particular direction; but then he would not have been the innately versatile George Henry Lewes. His influence has been spread over a wide field, and has been largely beneficial to progress and enlightenment; he never aimed, we believe, at piling up an enduring monument to himself.

NOTES

MR. E. J. STONE, F.R.S., Astronomer-Royal at the Cape of Good Hope, has been appointed to the Radcliffe Observatory, Oxford, in place of the late Rev. R. Main.

MR. WILLIAM SPOTTISWOODE, having been elected President of the Royal Society on Saturday last, has resigned the office of Secretary to the Royal Institution. At the meeting, on Monday last, it was proposed that the Members of the Royal Institution subscribe to present a bust of Mr. Spottiswoode to the Institution as a recognition of his valuable services as Treasurer and Secretary successively.

WE have already referred to the new Parkes Museum of Hygiene, at University College, London, and we now earnestly draw our readers' attention to the appeal made by the Executive Committee for subscriptions towards an endowment, which is absolutely necessary for the efficiency of the institution, in diffusing the much needed knowledge of sanitary appliances and their uses. Although quite in its infancy, the Parkes Museum contains objects relating to life-protection, dietetics, clothing, furnishing, engineering, and architecture—in fact, every branch of hygiene. The library already consists of between 300 and 400 volumes, exclusive of pamphlets. "It cannot be too widely known," the Executive Committee state, "that it is intended to extend the benefits of the Museum to all classes, so that not only professional men, but owners of property, employers of labour, artisans, and others, both men and women, may be able to study at their leisure the subjects in which they are most interested." The Executive Committee, therefore, confidently appeal for pecuniary support to all those who, while being interested in technical education and sanitary science, have the inclination and the means to give such assistance. The Committee will not only be glad to receive subscriptions of money, but also books and pamphlets in any language, statistical tables, maps, plans, and other drawings, models, apparatus, or specimens illustrating any branch of hygiene. Subscriptions may be paid to the Treasurer, Mr. Berkeley Hill, 55, Wimpole Street, W. All communications relating to the presentation of articles to the Museum should be addressed to the Curator, Mr. Mark H. Judge, Parkes Museum, University College, Gower Street, W.C.

THE *Daily News'* New York correspondent telegraphs that Mr. Edison announces that he has perfected a machine for measuring the current used in the electric light. It consists of an apparatus placed in every house lighted by electricity, which registers the quantity of electricity consumed, and uses for the purpose the one-thousandth part of the quantity consumed in the building. Mr. Edison declares that his invention of the light, including the arrangement for counteracting loss in subdivision, is now completed. His experiments at present are directed to reducing the cost. He has, he says, already brought this decidedly below the cost of gas, and as soon as the minimum is reached, will make the results public. The *New York World* contains the following interesting details of Mr. Edison's doings:—"Dozens of workmen and machinists are hard at work at Menlo Park on the new buildings, the workshop being now almost ready for the roof. Mr. Edison said to a reporter for the *World*, 'I don't know when I am going to stop making improvements on the electric light. I've just got another one that I found by accident. I was experimenting with one of my burners when I dropped a screw-driver on to it. Instantly the light was almost doubled and continued to burn with the increased power. I examined the burner and found it had been knocked out of shape. I restored it to its original form, and the light was decreased. Now, I make all my burners in the form accidentally given to that one by the screw-driver. The result is that I can produce the amount of light given out by the first burner with little more than half the power. It is almost impossible to calculate with certainty the resources of my light, but I have engaged a mathematician to work out the problem from my data.' On the whole, Mr. Edison states he is confident of success, however much any one may be puzzled by his methods or claims."

THE Corporation of Liverpool have given notice that they intend to apply in the ensuing Session for an Act authorising the lighting of the public streets, places, and buildings within the borough by means of the electric light, "or otherwise than by means of gas." The Corporations of Warrington, Derby, South Shields, Leicester, Blackburn, Over Darwen, and Stratford-upon-Avon, in conjunction, in the latter borough, with the Local Board of Health, ask for similar powers in the Bills which they intend to promote.

THE sixth part of the illustrated work of C. J. Maynard on the "Birds of Florida, and the Water and Game Birds of Eastern North America," has just been published, and contains three quarto plates, one of them representing sixty-six pecies of eggs.

MESSRS. MACMILLAN AND CO. will shortly publish "Notes of a Naturalist on Board the *Challenger*," by Mr. H. N. Moseley, F.R.S., who was on the scientific staff of the expedition. The work will be illustrated.

THE zoological station of the Zoological Society of the Netherlands has published its third report. During the summer of 1878 the station was erected on the Island of Terschelling, and in the course of two months it was visited by ten zoologists. This year the investigation of the Zuider-Zee was the principal object kept in view, and for that purpose some fourteen dredging excursions with the boat stationed in West-Terschelling for laying buoys were organised. The station underwent no small improvement, a nicely-organised aquarium-room being added to the main building. Here a small hot-air engine of about $\frac{1}{10}$-horse power (construction of D. W. van Rennes, Utrecht) drives an air-forcing pump; the compressed air gathered in a white-iron box is distributed through numerous aquarium-vessels by means of gum-elastic tubes and small glass-canules. By means of this arrangement even on hot days numerous animals were kept alive. The investigation of the Zuider-Zee not being brought to a close, the Island of Terschelling will probably next year see the station again erected in one of its picturesque valleys.

AT last week's meeting of the Paris Academy M. Pasteur read a critical examination of the posthumous papers of Claude Bernard, in which statements were made opposed to the conclusions reached by M. Pasteur. He regards the manuscript of Bernard as a sterile attempt to substitute for well-established facts the deductions of an ephemeral system. "The errors, however," M. Pasteur says, "of those who in the sciences have accomplished a valiant career have only the philosophical interest which attaches to the knowledge of our human frailty."

THE following are the probable arrangements of the Royal Institution for the Friday Evening Meetings before Easter, 1879:—January 17, Prof. Tyndall, "The Electric Light;" January 24, Prof. W. E. Ayrton, "The Mirror of Japan and its Magic Quality;" January 31, Mr. H. Heathcote Statham, "The Logic of Architectural Design;" February 7, Rev. H. R. Haweis, "Bells;" February 14, Prof. G. Johnstone Stoney, "The Story of the November Meteors;" February 21, Prof. Roscoe, "A New Chemical Industry;" February 28, Sir Wm. Thomson, "The Sorting Demon of Maxwell;" March 7, Prof. Huxley, LL.D., F.R.S.; March 14, Mr. E. B. Tylor, "The History of Games;" March 21, Prof. Abel, C.B., F.R.S., "Recent Contributions to the History of Detonating Agents;" March 28, Sir Henry C. Rawlinson, K.C.B., D.C.L., "The Geography of the Oxus, and the Changes of its Course at different Periods of History;" April 4, Mr. Warren de la Rue, D.C.L., F.R.S.

THE Smithsonian Institution of Washington, U.S., has issued a catalogue of their valuable publications, and a list of various societies, journals, &c., with which they exchange publications. The Institution is anxious to add to this list any societies with which they have not hitherto been in communication, and also the names of specialists in all parts of the world. Communications should be addressed to Dr. Spencer F. Baird, at the Institution.

THE Rev. S. J. Whitmee writes us with reference to reports which have lately reached this country of violent volcanic eruptions in the Society Islands, and also in the neighbourhood of New Britain. "These," he says, "have not, however, been confirmed, and from private information received from Tahiti, I hear that nothing has occurred in the Society Islands like what has been reported. From an Australian paper I saw a month ago, that the master of the brigantine *Matautu* had found a vast quantity of pumice-stone about the Ellice Islands. This is now confirmed by the captain of the missionary barque *John Williams*, who visited these islands in May and June last. From his account, a brief notice of which appeared in the *Times* last Friday, we learn that the pumice has reached the Ellice group from another locality, and that there has been no eruption in those islands. I give the following quotation from a notice of the *John Williams'* voyage which appears in the *Samoa Times* for July 27:—'In the Gilbert group, although the currents were somewhat irregular, the old strong easterly set seems to prevail again. In fact, sometimes it was running at the rate of thirty-six to forty-eight knots in the twenty-four hours. . . . On the outward voyage (from Samoa), when about 120 miles to the east of Nukulaelae, vast quantities of pumice-stone were passed, and the shores of all the Ellice Islands from Nukulaelae to Nintao and Nanumea are thickly covered with it. It is no exaggeration to say that hundreds of tons have been thrown up on every island. Stumps of trees and thick bamboos with roots attached have been thrown up on some of the islands. Early in May the brig *Isabella*, Everts, master, from Sydney, called at Vaitupu, and there left a report that there had been some volcanic eruption in the Society group. One report even says that Raiatea and Borabora have been destroyed, and 2,000 lives lost. There were also passed while beating back (to Samoa) between Nukulaelae and Fakaofo, one *mālili* tree about eighty feet long, one cocoa-nut tree, and four other gigantic forest trees, all evidently proofs that the story of Capt. Evers is probably only too true. The pumice-stone began to arrive on the Ellice Islands about the middle of April, and continued till the middle of June. When first noticed there was no seaweed growth on the pieces, and no barnacles, but by the beginning of June this began to be plainly noticeable. There is no trace of the pumice-stone in the Union or Gilbert Groups, and the time of its arrival in the Ellice group will be interesting to those who study the question of ocean currents.' From the above remarks it would appear that the pumice is supposed to have arrived from the east, and it is taken for granted that it has come from the Society Islands. But it is at least doubtful whether any eruption has taken place there. And, at a date later than that given as the time when the pumice ceased to reach Vaitupu, the *John Williams* met with trees far to the east of that island. If it had come from the east, surely some would have been seen also about the Union or Tokelau Islands. We must wait for further information as to where the eruption took place; but I am inclined to think it must have been to the west of the Ellice Islands."

WE hear that M. Mannheim is engaged upon the preparation of a work entitled "Géométrie Cinématique." Hitherto our acquaintance with this important subject has been derived from Italian and German works, or these translated into French. M. Mannheim's ability as a geometer leads us to expect he will produce an elegant treatise on this branch of geometry.

ACCORDING to the report for 1877 recently issued, made by Dr. Corfield, the Medical Officer of Health for St. George's, the death-rate for the parish in that year was as low as 17·46. Of the three sub-districts into which the parish is divided Hanover Square had a rate of 16·58, Mayfair of 13·04, and Belgravia of 18·70. The rate for the whole parish (17·46), with a calculated population of 91,037 is compared with some of the twenty-two "other large towns of the United Kingdom." Portsmouth has the lowest rate (17·4), which is therefore just under, Brighton with 18·7 coming next. No foreign town has so low a death rate as St. George's parish, the nearest known approach being Philadelphia (18·8). Dr. Corfield has calculated the mean duration of life in the parish and in each of the sub-districts for 1877. For the whole parish it was 49·52 years, for Hanover Square sub-district 56·63, for Mayfair 62·66, and for Belgravia 45·53. The mean duration in the 22 towns on which the Registrar-General reports was (including London) 34·2.

PROF. E. MORREN'S useful "Correspondance Botanique" is continually increasing in size. This year it occupies 150 pages, against 92 last year. The principal increase is in the American department, which is much fuller and more complete than it has been before. But in Europe also there is an increase in the number of names, partly due no doubt to more accurate information, but partly also, we may hope, to an actual increase in the number of workers in botanical science. It is a significant fact that while second and third class university towns in Germany or Italy number their six or eight working botanists, mostly attached to the university, the number of names given under the heads of Oxford and Cambridge together is five.

THE *Golos* publishes the following telegram from Tiflis, dated November 27:—"Telegraphic intelligence received to-day states that this morning at two o'clock a severe earthquake was experienced at Suram and Borjom. A frightful rumbling noise was heard during the earthquake, accompanied by a shock so severe that people were thrown from their beds. Nothing similar has occurred in the district before."

YESTERDAY M. Bardoux, Minister of Public Instruction, laid the first stone of the new practical school of the Faculty of Medicine in Paris.

THE Commission for the reception of the great reflector at the Paris Observatory have assented to its reception, although the mirror cannot be used in its full breadth without being diaphragmised at the circumference. It is stated, moreover, that the instrument can be used only on a very few days in the year in the atmosphere of Paris, and that reflectors are decidedly unmanageable except under special circumstances. It remains to be explained, then, how Lord Rosse and the great Herschel could manage to make so many interesting discoveries with instruments declared so unsuitable for celestial observations.

THE Paris Observatory being no more intrusted with the care of publishing the *International Bulletin of Meteorology*, which has been taken over to the rue de Grenelle by the Central

Bureau, the Paris Press are deprived of all the documents for current meteorology which were put at their disposition by M. Leverrier.

We are informed that Admiral Mouchez has signed with M. Martin the contract for the polishing of the great lens of the great refracting telescope prepared by M. Leverrier. The lamp, of 75 centimetres diameter, has been placed in the hands of M. Feil, the glass founder, to repair a few defects which have been detected. This operation is done by cutting out the defective parts and heating the glass to a state of liquidity. This process is sometimes used for central parts with success. Guinault, the originator of the process used now for glass-founding, is said to have so mended eighteen times one of the most celebrated glasses produced by him at the end of the last century.

We regret to announce the death of Dr. Eugen von Gorup Besanez, Professor of Chemistry at Erlangen University, and author of an excellent chemical handbook in three volumes. He had attained the age of sixty-two years.

Bentley and Trimen's "Medicinal Plants" has now reached its thirty-fifth number, and maintains in every way the excellent promise with which it started. Both the letterpress and the illustrations are of sterling quality, and the work, when completed, will be a complete repertorium for the botanico-medical student.

Near the Rhinefall at Schaffhausen a cave has been discovered which was evidently used as a dwelling-place in prehistoric times. Flints, broken jars, and bone rests were found in it. The jars were partly of Celtic and Roman origin.

We have on our table the following works:—"Six Months in Ascension," by Mrs. Gill, John Murray; "Robert Dick, Geologist and Botanist," by Dr. Smiles, John Murray; "Pocket Book for Chemists," by Thomas Bayley, E. and F. H. Spon; "The Mollusca of the Firth of Clyde," by Alf. Brown, Hugh Hopkins; "A Visit to South America," by Edwin Clark, Dean and Son; "Coal: its History and Uses," Edited by Prof. Thorpe, F.R.S., Macmillan and Co.; "Bau des Eozoon Canadense," by Karl Möbius, Theodore Fischer; "Flowers, and their Unbidden Guests," Translated by W. Ogle, Kegan Paul; "Vogelbilder aus fernen Zonen," by Dr. Ant. Reichenon, Theodore Fischer; "Dictionary of Scientific Terms," by William Rossiter, W. Collins and Sons; "On Foot in Spain," by J. S. Campion, Chapman and Hall; "Elementary Geometry Books," i.–v., Fourth Edition, by J. M. Wilson, Macmillan and Co.; "Treatise on Chemistry," vol. ii., part I, by Professors Roscoe and Schorlemmer, Macmillan and Co.; "The Magic Lantern Manual," by W. J. Chadwick, F. Warne and Co.; "The Localisation of Cerebral Disease," by Dr. Ferrier, Smith, Elder, and Co.; "Cassell's Natural History," vol. ii., Edited by P. Martin Duncan, F.R.S., Cassell, Petter, and Galpin.

The additions to the Zoological Society's Gardens during the past week include a Macaque Monkey (*Macacus cynomolgus*) from India, presented by Dr. Whately, R.N.; a Brazilian Tree Porcupine (*Sphingurus prehensilis*) from Trinidad, presented by Dr. J. F. Chittenden, jun.; a Common Peafowl (*Pavo cristatus*) from India, presented by Mrs. Russ; two Common Cormorants (*Phalacrocorax carbo*), British, presented by Mr. Frank Buckland, F.Z.S.; a Water Rail (*Rallus aquaticus*), British, presented by Mr. W. Thompson; a Black Lemur (*Lemur macaco*) from Madagascar, a Rufous-vented Guan (*Penelope cristata*) from Central America, purchased; a Red Kangaroo (*Macropus rufus*), born in the Gardens.

ROYAL SOCIETY—THE PRESIDENT'S ANNIVERSARY ADDRESS[1]

Gentlemen,

At the conclusion of this, the fifth and last year during which I shall have held the most honourable office of your president, I have the gratifying assurance that the communications made to the Society and its publications have in no respect fallen off in scientific interest and value. We have not, indeed, been called upon to undertake during the past year such responsible and time-absorbing duties in behalf of the Government as the Polar, Circumnavigation, Transit of Venus, and other Committees demanded of us during the previous four years; but some of the results already achieved by those expeditions have been contributed to our publications, and we are in expectation of more. It is also with satisfaction that I can refer to the good attendance at our evening meetings, *soirées*, and *réunions*, as evidence of the interest taken in our proceedings by the Fellows generally and their friends.

Before proceeding to touch upon some of the advances made in science during the last few years, I have, as heretofore, to inform you of the Society's condition and prospects, and of those duties undertaken by its Council, for information as to which non-resident Fellows look to the annual address.

The loss by death of Fellows, twenty-one in number, is but little short of last year's rate, while that of Foreign Fellows (six) is twice as great as last year. On the home list is Sir George Back, the last, with the exception of our late venerable President, Sir E. Sabine, of that celebrated band of Arctic voyagers which during the early part of the century added so much to our renown as navigators and discoverers. Sir George was further the companion of Franklin and Richardson in that overland journey to the American Polar Sea, in which human endurance was tried to the uttermost compatible with human existence, and the modest but thrilling narrative of which, by the first-named officers, will ever hold a unique place in the annals of scientific discovery. Of Indian explorers no less than four have been taken away, namely, Col. Sir Andrew Waugh, for many years Director of the Great Trigonometrical Survey of India; and shortly afterwards his successor, Col. Montgomerie; Dr. Oldham, for a quarter of a century the Director of the Geological Society of India; and Dr. Thomas Thomson, my fellow-traveller in the Himalaya, the narrative of whose explorations in Western Tibet contains the first connected account of the physical and natural features of that remote and difficult country. Lieut.-Gen. Cameron survived but for one year our late Fellow, Sir Henry James, his predecessor in the Direction of the Ordnance Survey of Great Britain. In the Rev. James Booth we have lost a mathematician of high attainments, and the author of many contributions to our own and other scientific journals. The Rev. W. B. Clark, of New South Wales, wrote many papers abounding in excellent observations on Meteorology and Geology, especially made in England, the Cape of Good Hope, Australia, and the Pacific. The Rev. R. Main, the Director of the Radcliffe Observatory, at Oxford, was a very eminent astronomer, and for nearly half a century an indefatigable author. Lastly, Earl Russell, the distinguished statesman and the earnest advocate, whether in the Government or in Parliament, of every measure for the promotion of scientific inquiry.

Of Foreign Fellows our losses are a great chemist in Becquerel, of Paris, whose election took place upwards of forty years ago; a great physiologist in Claude Bernard, also of Paris; the father of mycology, and for long the patriarch of Scandinavian botanists, Elias Fries; a most distinguished physicist and the recipient of both a Rumford and Copley medal in Regnault; a veteran anatomist in Weber; and in Secchi, of Rome, an astronomer of astonishing activity, the author of more than three hundred separate contributions to the science of which he was so great an ornament.

In matters of finance I may with satisfaction refer you to our treasurer's balance-sheets.

It will be in your recollection that Mr. T. J. Phillips Jodrell placed in 1874 a sum of 6,000*l*. at the disposal of the Society, with the view of its being devoted to the encouragement of scientific research by periodical grants to investigators whom your Council might think it expedient thus to aid. Shortly after the receipt of this munificent gift, the Government announced its

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[1] Address of Sir Joseph Hooker, C.B., K.C.S.I., the President, delivered at the Anniversary Meeting of the Royal Society, on Saturday, November 30, 1878.